

Notice of Allowability

Application No.

10/734,999

Examiner

Khanh B. Duong

Applicant(s)

MARSH ET AL.

Art Unit

2822

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment filed on December 27, 2006.
2. ☒ The allowed claim(s) is/are 38-101.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

M. Wilczewski
Primary Examiner
TC2806

DETAILED ACTION

Response to Amendment

This Office Action is in response to the amendment filed on December 27, 2006.

Accordingly, claims 63 and 76 were amended.

Currently, claims 38-101 remain pending.

Allowable Subject Matter

Claims 38-101 are allowed.

The following is an examiner's statement of reasons for allowance: none of the prior art of record, taken alone or in combination, fairly shows or suggests all the limitations as claimed.

Re claim 38, none of the prior art of record discloses a deposition method comprising the following limitations in combination with the rest of the limitations of the claim: flowing multiple time spaced inert purge gas pulses within the deposition chamber intermediate the flowing of the first precursor gas and the second precursor gas, said multiple time spaced inert purge gas pulses being characterized by a period of time between two adjacent of the multiple time spaced inert purge gas pulses which is void of flowing the first precursor gas and the second precursor gas to the chamber.

Re claim 40, none of the prior art of record discloses a deposition method comprising the following limitations in combination with the rest of the limitations of the claim: flowing a first precursor gas within the deposition chamber to form a first monolayer on the substrate, said first precursor gas flowing comprising a plurality of first precursor gas pulses, at least two of the plurality of first precursor gas pulses separated by a period of time when no gas is fed to the chamber, the plurality being more than two during formation of the first monolayer.

Re claim 52, none of the prior art of record discloses a deposition method comprising the following limitations in combination with the rest of the limitations of the claim: after forming the first monolayer on the substrate, flowing a second precursor gas different in composition from the first precursor gas within the deposition chamber to form a second monolayer on the first monolayer, said second precursor gas flowing comprising a plurality of time spaced second precursor gas pulses.

Re claim 63, none of the prior art of record discloses a deposition method comprising the following limitations in combination with the rest of the limitations of the claim: after forming the first monolayer on the substrate, flowing a second precursor gas different in composition from the first precursor gas within the deposition chamber to form a second monolayer on the first monolayer, said second precursor gas flowing comprising at least two time abutting second precursor gas pulses which are characterized by different second precursor flow rates.

Re claim 74, none of the prior art of record discloses a deposition method comprising the following limitations in combination with the rest of the limitations of the claim: flowing multiple time spaced inert purge gas pulses within the deposition chamber intermediate the flowing of the first precursor gas and the second precursor gas, said multiple time spaced inert purge gas pulses being characterized by a period of time between two adjacent of the multiple time spaced inert purge gas pulses which is void of flowing the first precursor gas and the second precursor gas to the chamber.

Re claim 75, none of the prior art of record discloses a deposition method comprising the following limitations in combination with the rest of the limitations of the claim: after forming the first layer on the substrate, flowing a second precursor gas different in composition from the

first precursor gas to proximate the substrate within the deposition chamber to form a second layer on the first layer, said second precursor gas flowing comprising a plurality of time spaced second precursor gas pulses.

Re claim 76, none of the prior art of record discloses a deposition method comprising the following limitations in combination with the rest of the limitations of the claim: after forming the first layer on the substrate, flowing a second precursor gas different in composition from the first precursor gas to proximate the substrate within the deposition chamber to form a second layer on the first layer, said second precursor gas flowing comprising at least two time abutting second precursor gas pulses which are characterized by different second precursor flow rates.

Re claim 77, none of the prior art of record discloses a deposition method comprising the following limitations in combination with the rest of the limitations of the claim: after forming the first monolayer on the substrate, flowing a second precursor gas different in composition from the first precursor gas within the deposition chamber to form a second monolayer on the first monolayer, said second precursor gas flowing comprising a volumetric gas flow rate which varies across a duration of second precursor gas flowing within the deposition chamber.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh B. Duong whose telephone number is (571) 272-1836. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra Smith, can be reached on (571) 272-2429. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


KBD


M. Wilczewski
Primary Examiner